

1) SUBMIT TO:

[or06]

2) CONFERENCE TITLE:

Acquisition, Tracking, and Pointing XIV

CONFERENCE CHAIRS:

Michael K. Masten and Larry A. Stockum

3) ABSTRACT TITLE:

APS based micro star tracker

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5) PRESENTATION:

Oral presentation

6) ABSTRACT TEXT:

Sensors that can be used to track stars and other visible features are essential for most spacecraft or space mission. Current state-of-the-art star trackers requires 1 – 5 kg of mass and 5-13 W of power to operate. The objective of a research project at the Jet Propulsion Laboratory is to develop and demonstrate a new generation, lightweight (<0.5 kg), and low-power (<1 W) star-tracking device. The project will utilize an Active Pixel Sensor (APS) with onboard analog to digital conversion rather than utilizing the traditional CCD technology. The unit will also incorporate internal processing capability. By taking advantage of the unique features of the APS/microprocessor combination, the microtracker will achieve about an order-of-magnitude reduction in mass and power consumption compared to present state-of-the-art star trackers. The activity will produce a demonstration unit and characterize it in a laboratory environment and while viewing a star field. The incorporation of processing into the device allows the sensor to be multi-functional; it can be used both for star tracking functions as well as feature tracking and optical navigation.

7) KEY WORDS:

Star tracker, Active Pixel Sensor, Attitude determination

8) BRIEF BIOGRAPHY:

Carl Christian Liebe received a MSEE in 1991 and a Ph.D. in 1994, both from the Department of Electrophysics, Technical University of Denmark. Since 1997, he has been an employee of the Jet Propulsion Laboratory, California Institute of Technology. His research interests are new technologies and applications for autonomous attitude determination. He has authored/co-authored more than 30 papers.